

Stiff, self-supporting thermo-formed polypropylene packaging foam prodn

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Abstract of DE19544858

Prodn. of thermoformed packaging, esp. cup-shaped containers such as dishes, beakers and bowls, based on polypropylene (PP) foam, esp. HMS (high melt stability) PP, involves mixing with a physical blowing agent (I) and nucleating agent, heating and melting the expandable polymer and opt. other additives to an extruder with an inlet and plasticising zone, mixing zone, cooling zone and annular die, adding (I) under pressure, cooling to a temp. suitable for foaming, and extrusion to tubular sheet, which is cooled internally and externally, slit lengthwise, drawn and passed to thermoforming, e.g. deep drawing or vacuum forming. The novel features are as follows: (1) Melting, mixing with (I) and cooling are carried out in a twin screw extruder with a length of 30-42 D (D = screw dia.) with identical parallel screw turning in the same direction and (I) is added to the molten (plasticised) polymer at a pressure < 20 bar at the end of the 10-15 D long inlet and plasticising zone. (2) The melt is homogenised in a mixing zone with a length of 3-6 D and extruded at 170-190 deg C. (3) The tubular foam sheet is blown to 1-3 times the dia. of the extrusion die and drawn lengthwise in 1:(1-4) ratio. (4) The foamed tubular sheet is cooled to 130-160 deg C, slit and laid flat. (5) The foam sheet with a density < 0.4 g/cm³ and thickness of 0.8-4 mm is formed as required by reheating almost to the softening point of the polymer and sepd. Also claimed is thermoformed packaging of foam sheet based on physically foamed HMS PP with a MFI (230 deg C; 2.16 kp) of 37 g/10 min and tensile strength of 30-40 N/mm², opt. mixed with polyolefin(s), which contains a nucleating agent, is made from blown sheet with a blowing ratio of (3-1):1 and lengthwise drawing ratio of up to 4, has a density < 0.4 g/cm³, thickness of 0.8-4 mm and average cell dia. of 0.05-0.5, pref. 0.05-0.2 mm and can be printed like paper.

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